

```
#####
#
# MAIN
#
main <- function(class, system, level, num, den)
{
  #
  if (system == 1) {num1 <- c(num, num+den)
                    den1 <- c(num+den, den)}

  #
  if (system == 2) {num1 <- c(den, num+den)
                    den1 <- c(num+den, num)}

  #
  if (system == 3) {num1 <- c(num, num+den)
                    den1 <- c(num+den, num)}

  #
  if (system == 4) {num1 <- c(den, num+den)
                    den1 <- c(num+den, den)}

  #
  # Recursion
  #
  level <- level-1
  if(level != 0) main(class, system, level, num1, den1)
  else c(num1, den1)
  #
}
#
#####
#
sequencebuilding <- function(class, system, maxlevel, num, den)
{
  #
  numblock <- num
  denblock <- den
  #
  for(level in 1:maxlevel)
  {
    block <- main(class, system, level, num, den)
    numblock <- c(numblock, block[1 : (length(block)/2)])
    denblock <- c(denblock, block[(length(block)/2 +1):length(block)])
  }
  #
  return(list(numerator      = numblock,
              denominator    = denblock,
              sum.numerator.denominator = numblock + denblock))
  #
}
#
#####
#
sequencebuilding(class=2, system=1, maxlevel=5, num=c(1,2), den=c(2,1))
sequencebuilding(class=2, system=2, maxlevel=5, num=c(1,2), den=c(2,1))
sequencebuilding(class=2, system=3, maxlevel=5, num=c(1,2), den=c(2,1))
sequencebuilding(class=2, system=4, maxlevel=5, num=c(1,2), den=c(2,1))
#
#####
```